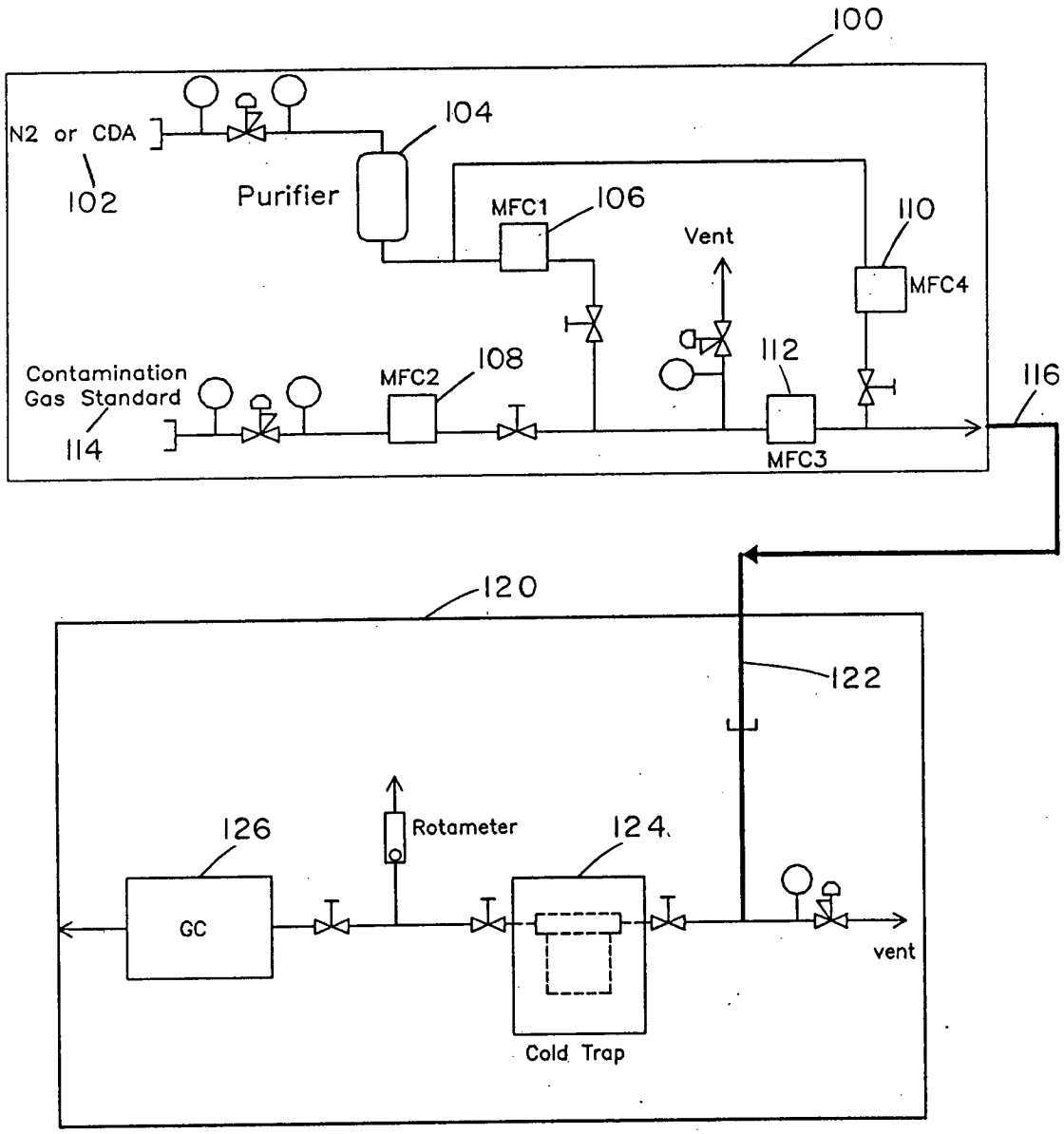


FIG. 1 PRIOR ART

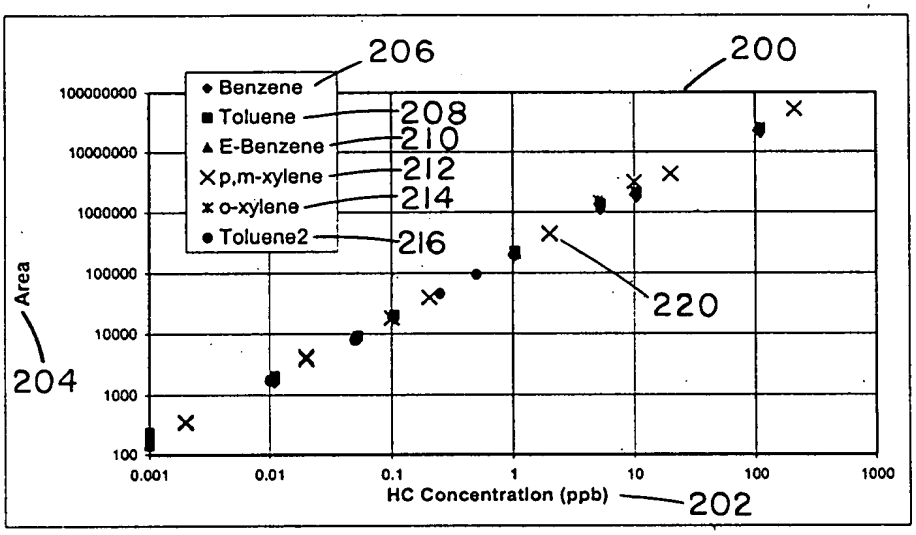


FIG. 2 PRIOR ART

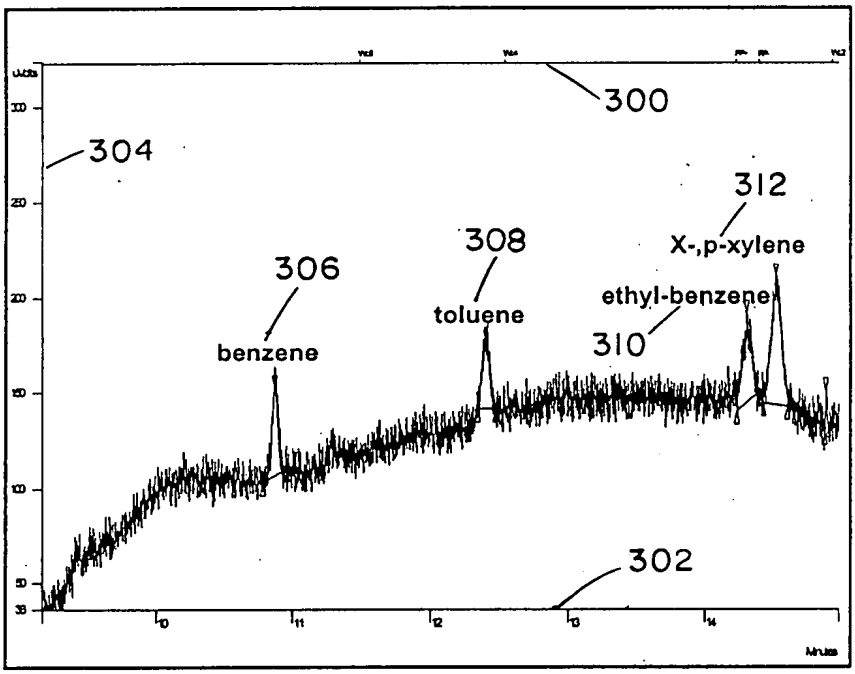


FIG. 3 PRIOR ART

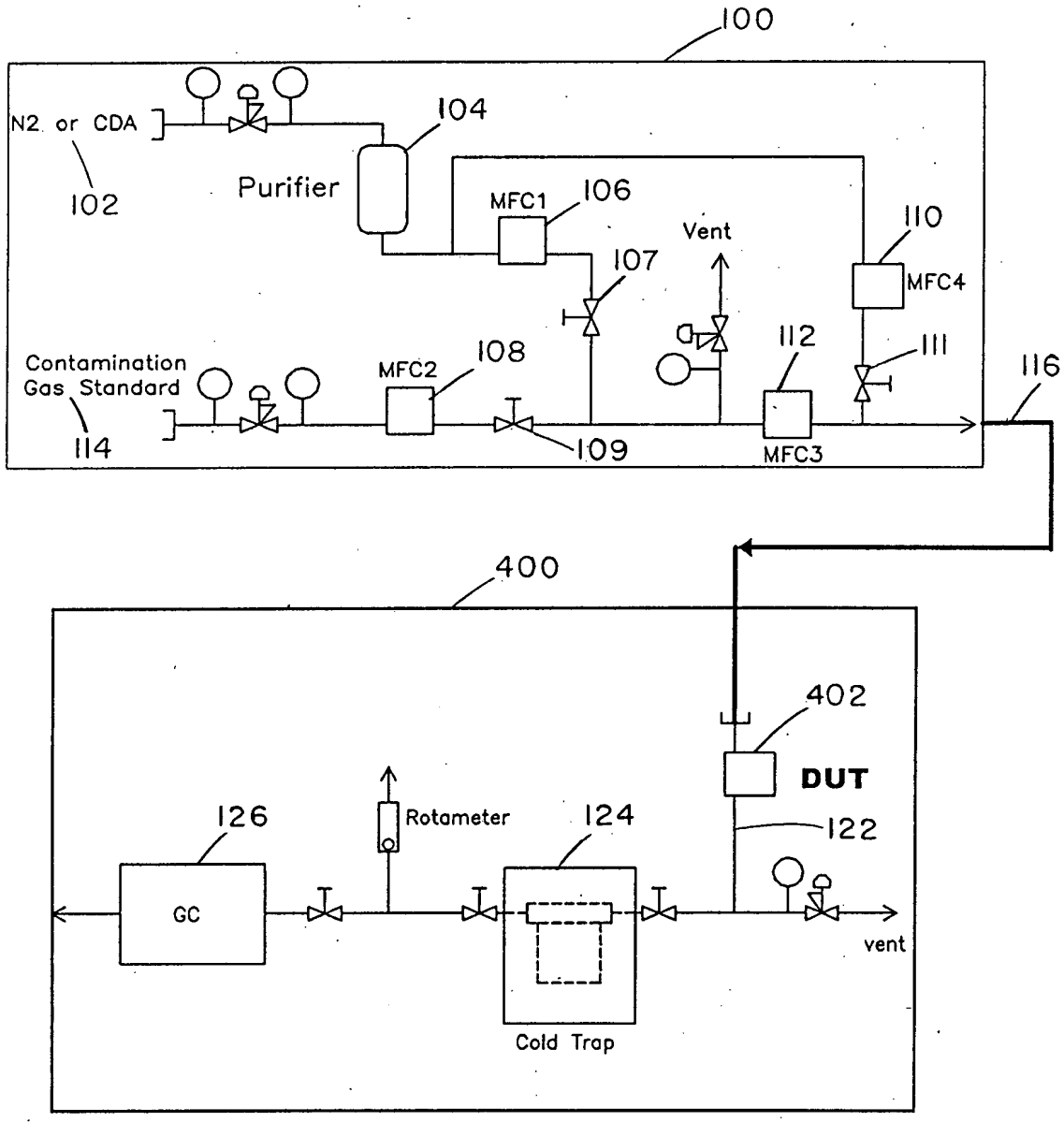
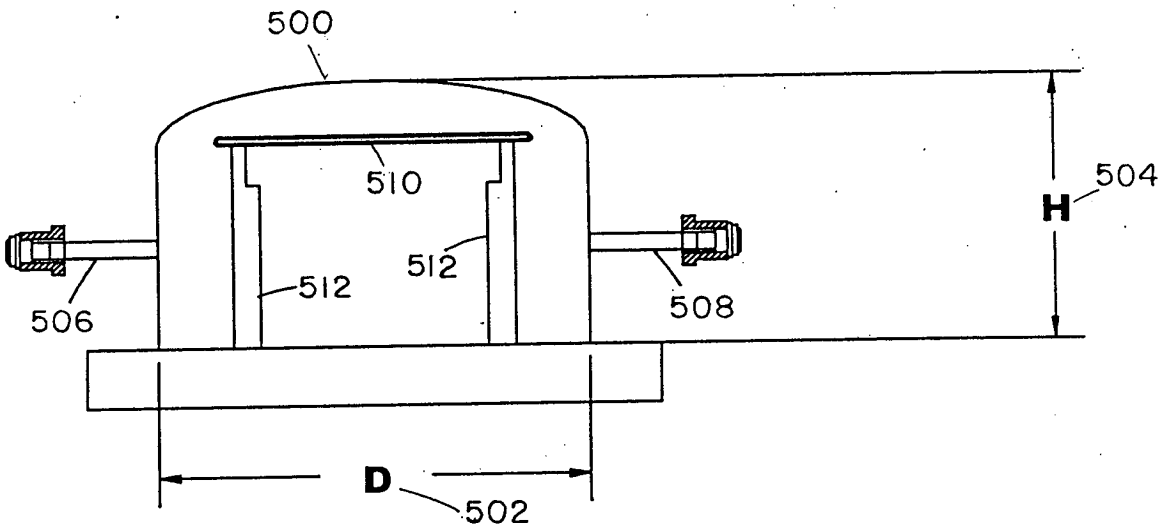

100
N2 or CDA
102
104
Purifier
MFC1
106
107
Vent
110
MFC4
111
112
116
Contamination
Gas Standard
114
MFC2
108
109
MFC3
400
402
DUT
122
126
Rotameter
124
GC
vent
Cold Trap

FIG. 4



Wafer Chamber

FIG. 5

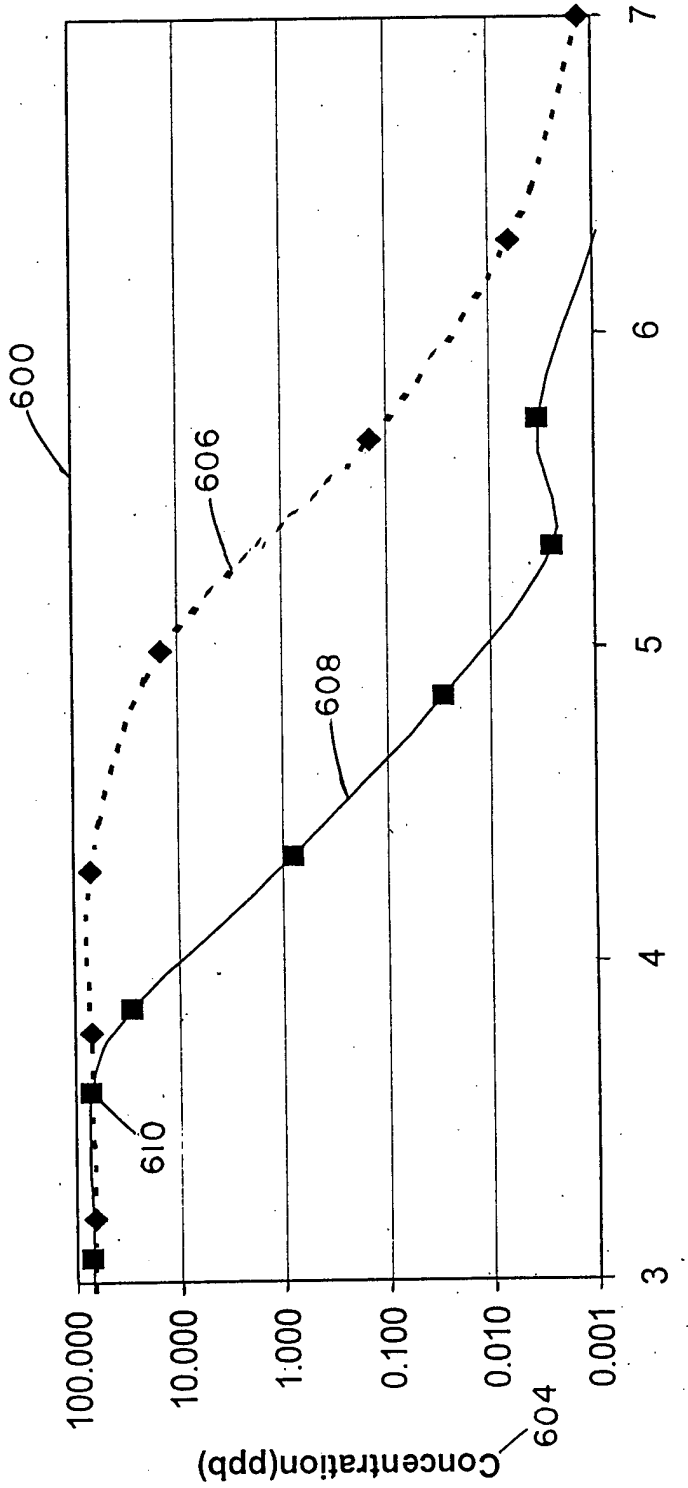

600
606
608
610
100.000
10.000
1.000
0.100
0.010
0.001
604
Concentration(ppb)
3
4
5
6
7
Time(hr)
602

FIG. 6

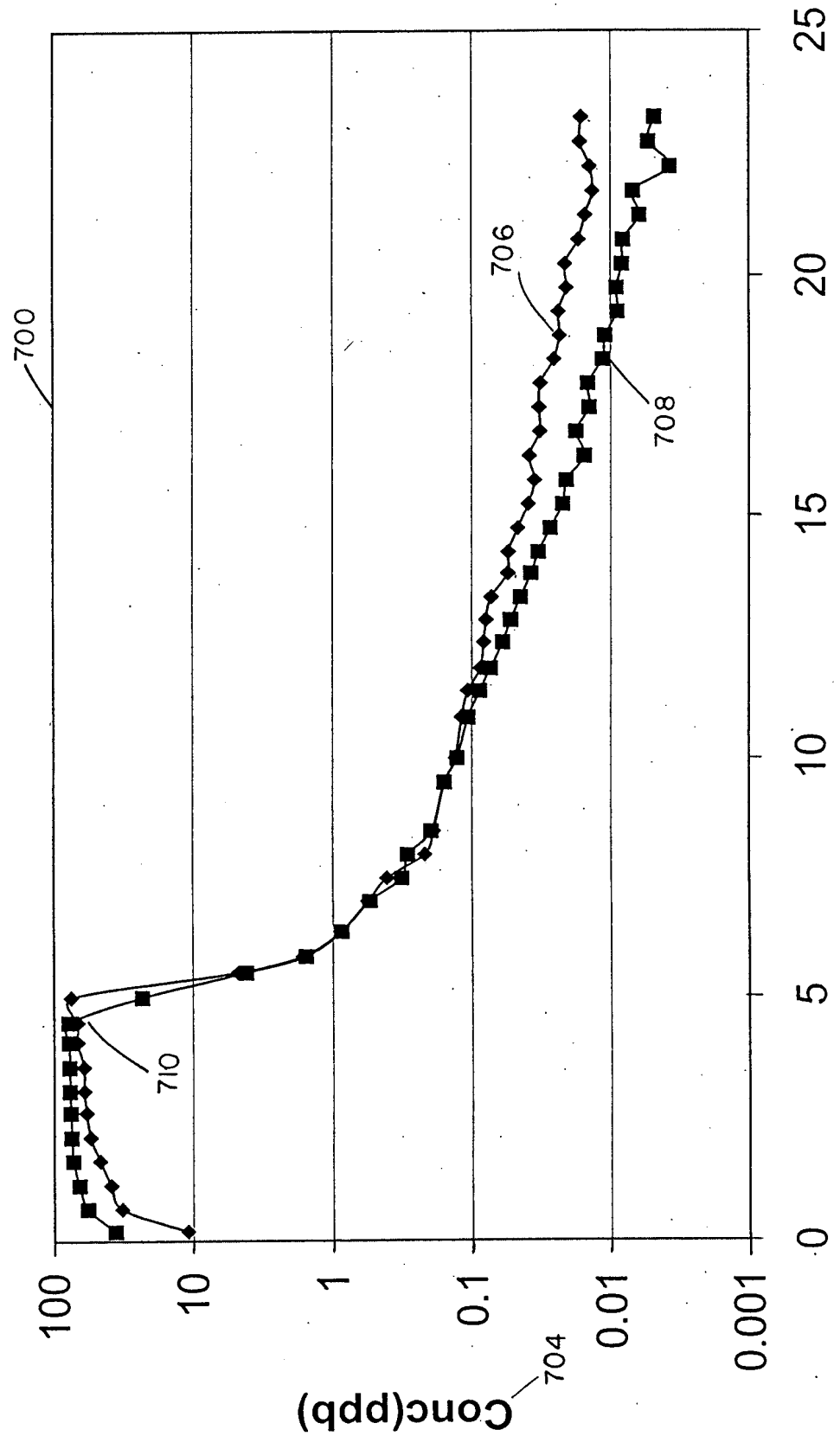

700
706
708
710
100
10
1
0.1
0.01
0.001
Conc(ppb)
704
0
5
10
15
20
25
Time(hr)
702

FIG. 7

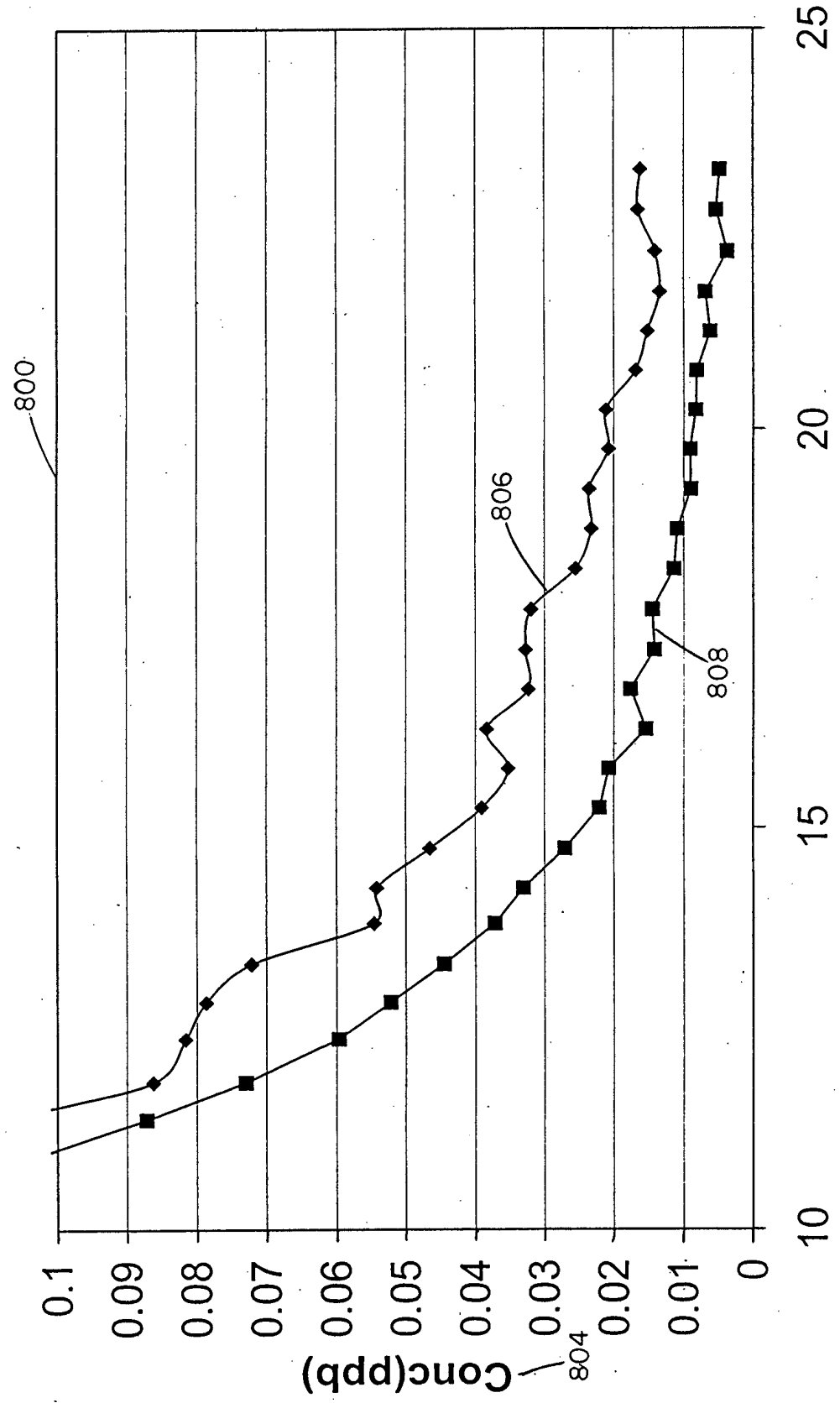

800
806
808
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Conc(ppb)
804
10
15
20
25
Time(hr)
802

FIG. 8

900
912
906
908
910
904
902
Concentration(ppb)
100
10
1
0.1
0.01
0.001
0
5
10
15
20
25
Time(hr)

FIG. 9

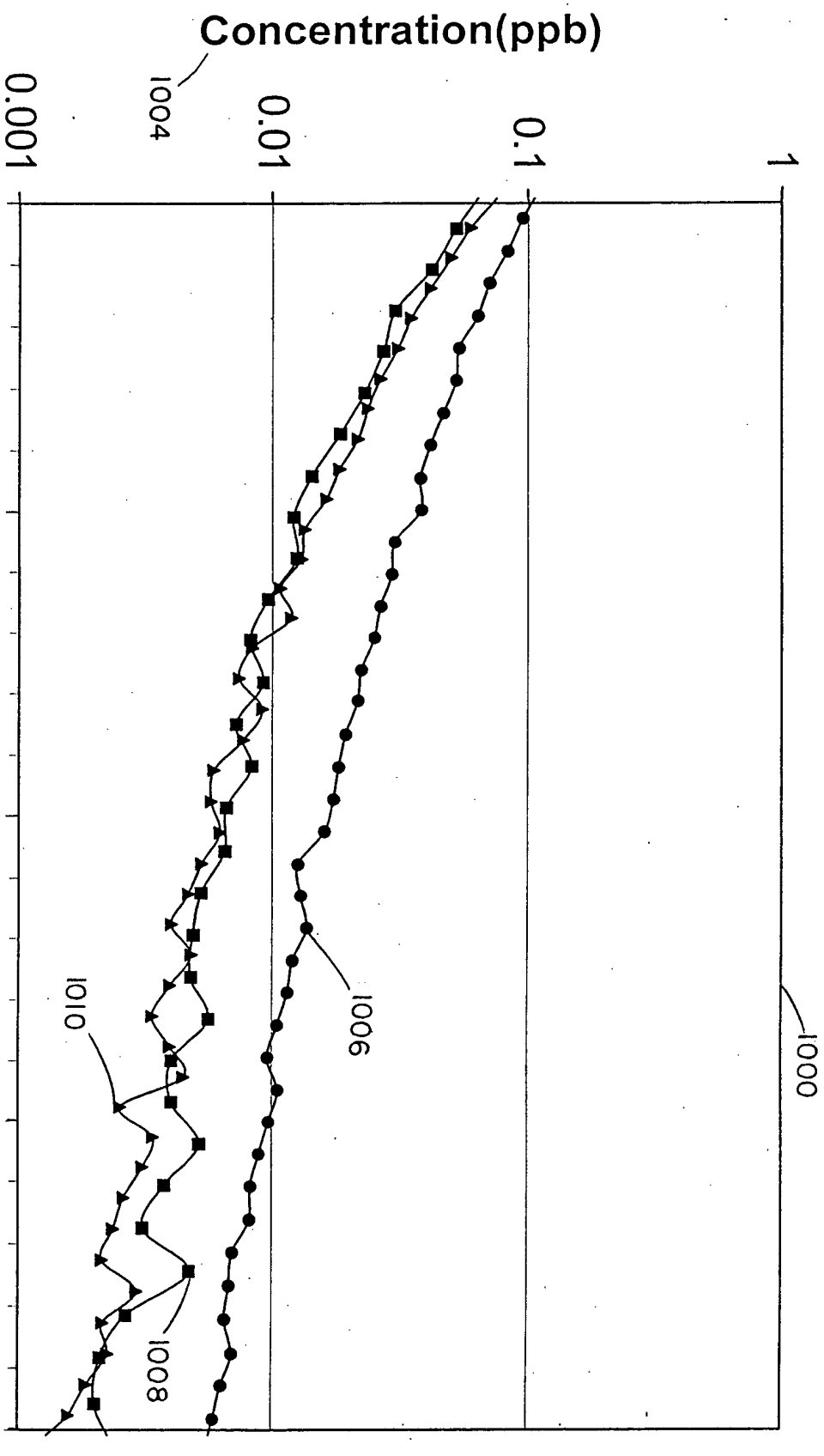

Concentration(ppb)
0.001
0.01
0.1
1
1004
5
10
15
20
25
Time(hr)
1002
1000
1006
1008
1010

FIG. 10

1100
1102
1104
1106
1108
1110
1112
1114
1116
1118
Concentration(ppb)
100.000
10.000
1.000
0.100
0.010
0.001
0
5
10
15
20
25
30
Time(hr)

FIG. 11

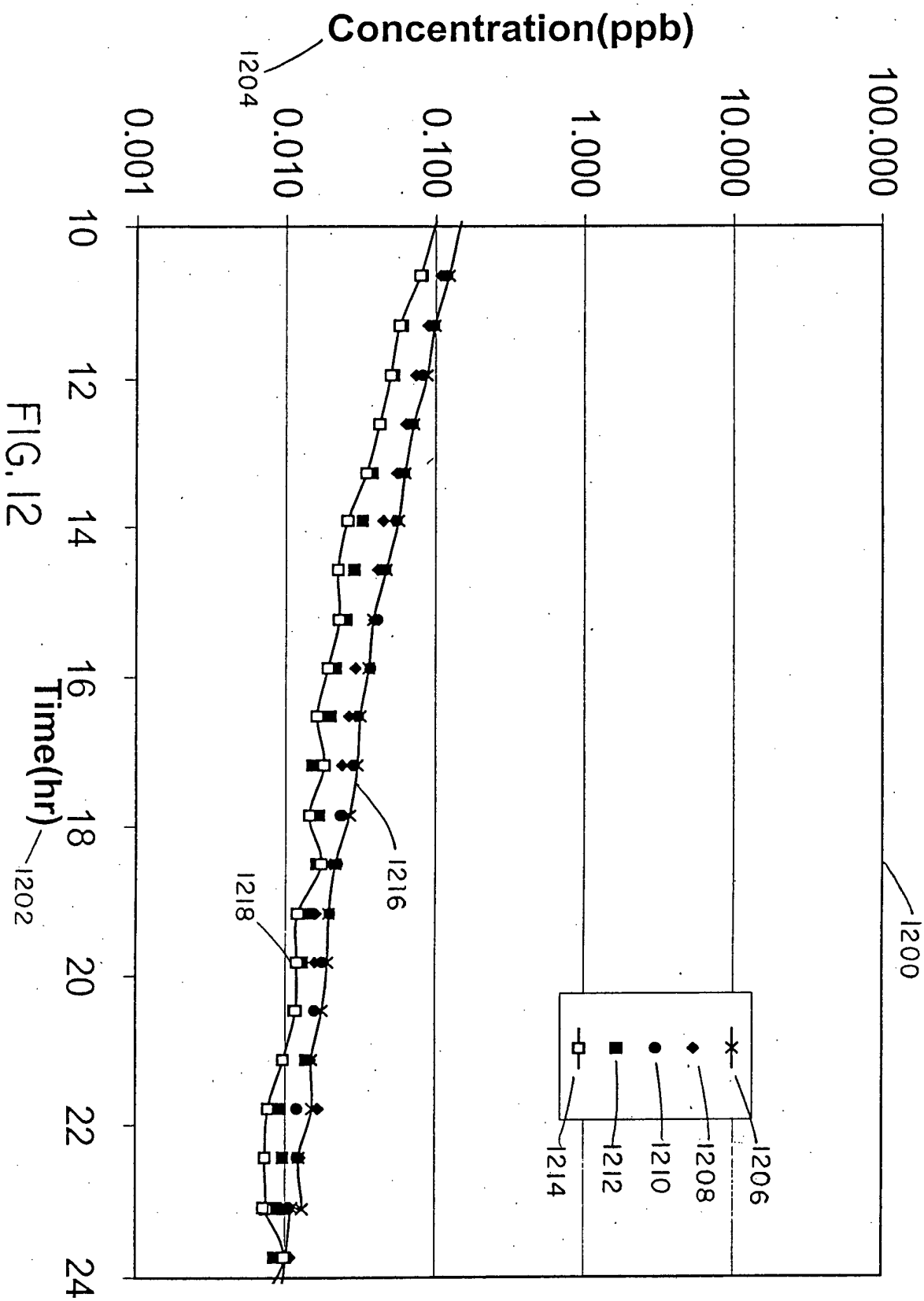

Concentration(ppb)
1204
0.001
0.010
0.100
1.000
10.000
100.000
10
12
14
16
18
20
22
24
Time(hr)
1202
1200
1206
1208
1210
1212
1214
1216
1218

FIG. 12

Figure 13

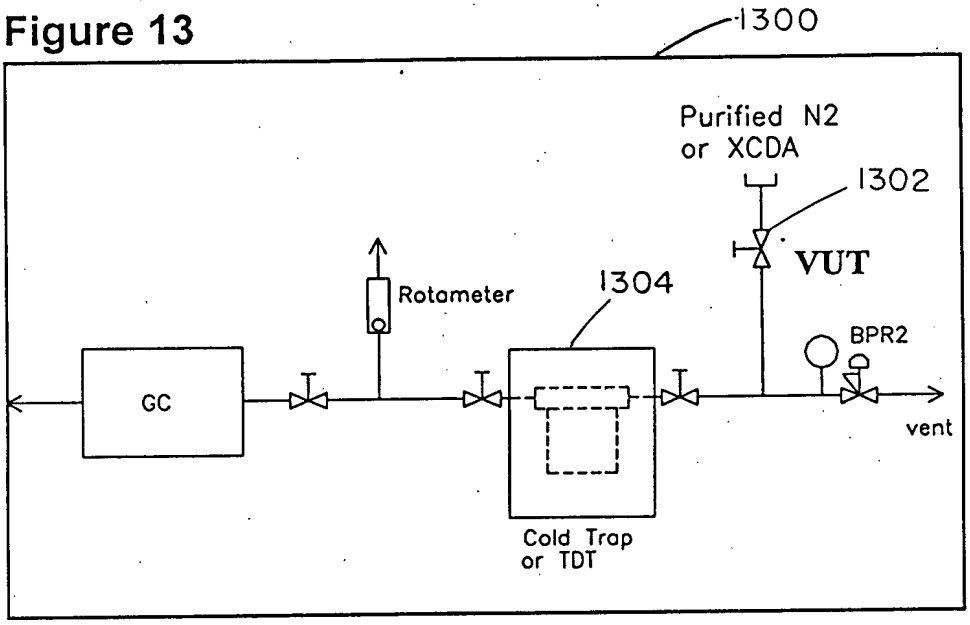


Figure 14

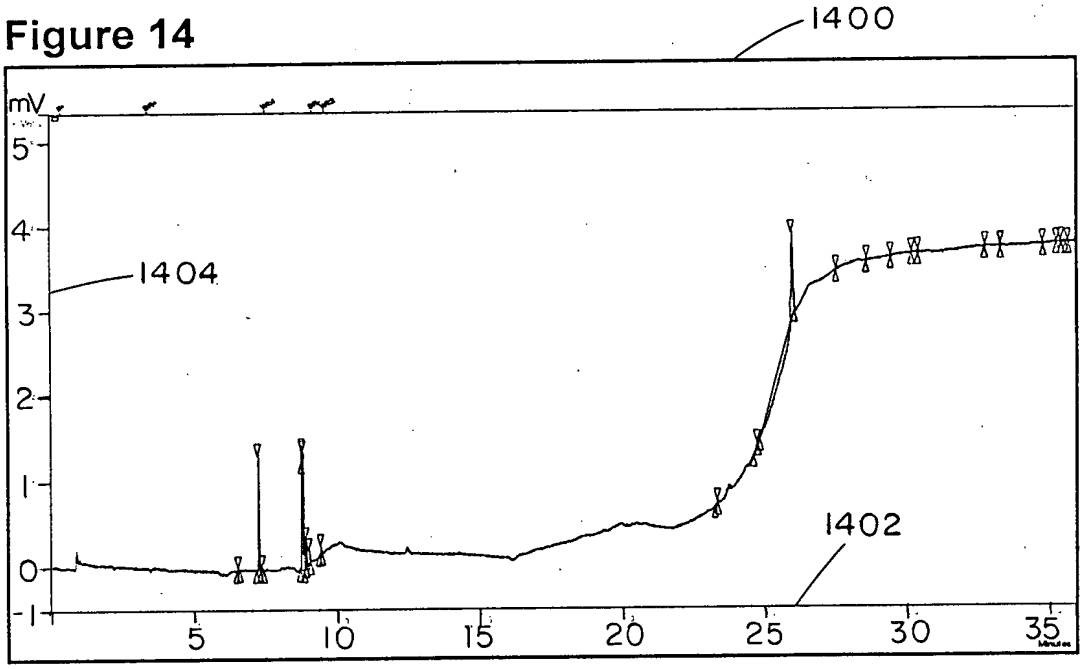
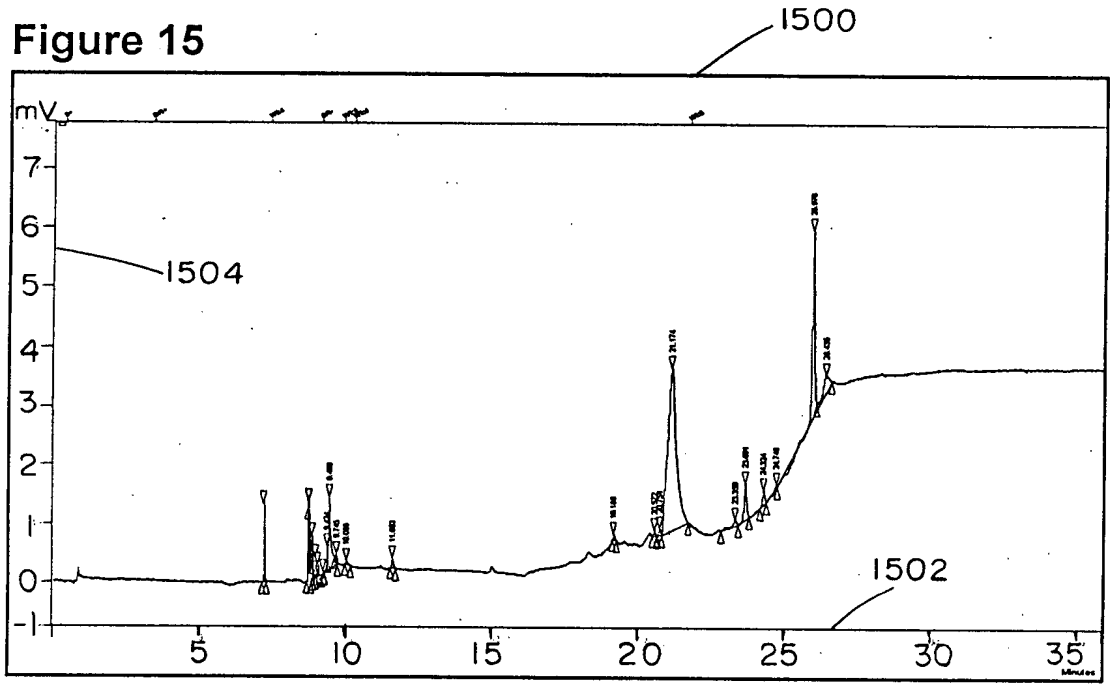


Figure 15



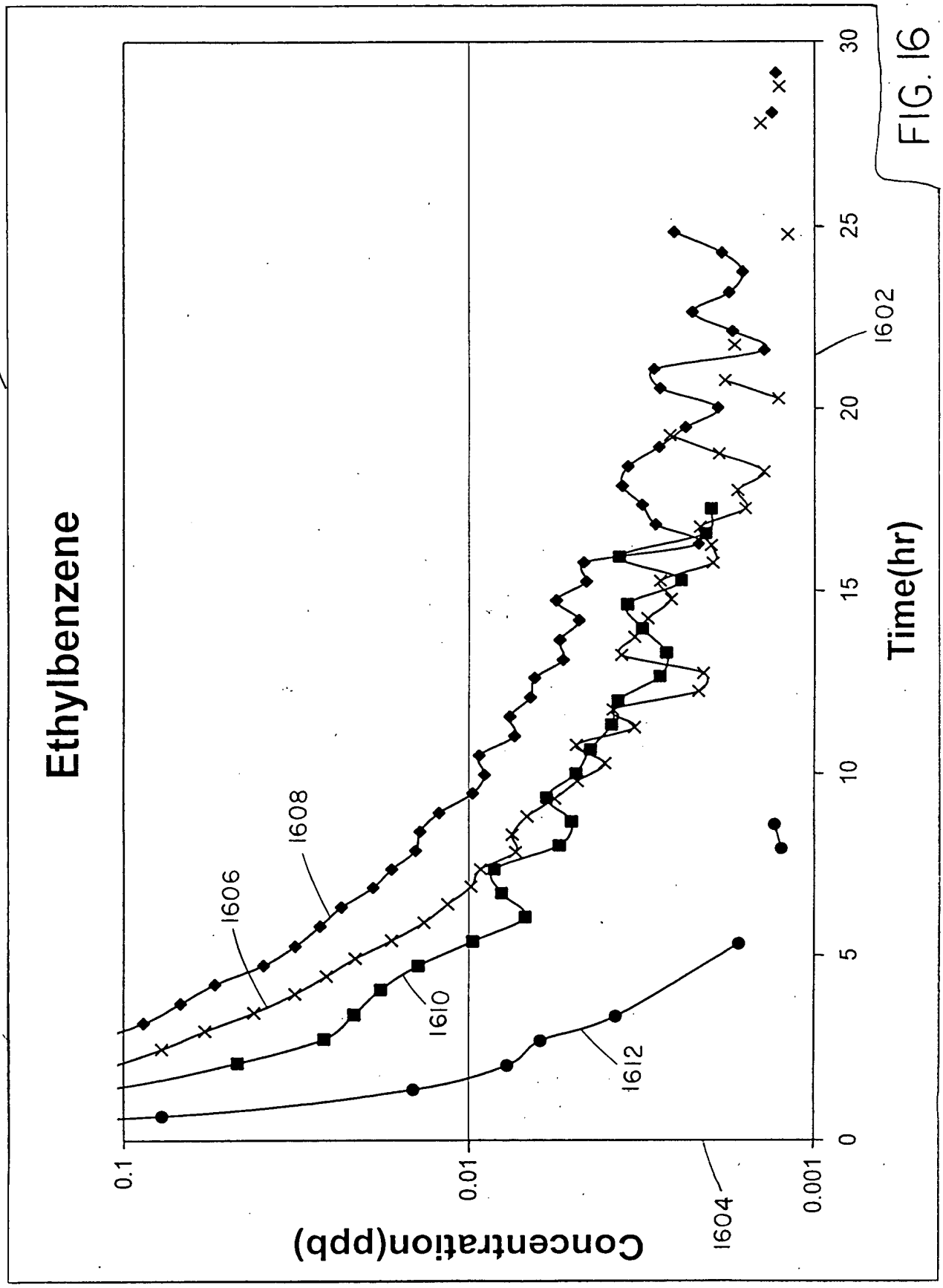

1600
Ethylbenzene
Concentration(ppb)
0.1
0.01
0.001
0
5
10
15
20
25
30
Time(hr)
1602
1604
1606
1608
1610
1612

FIG. 16

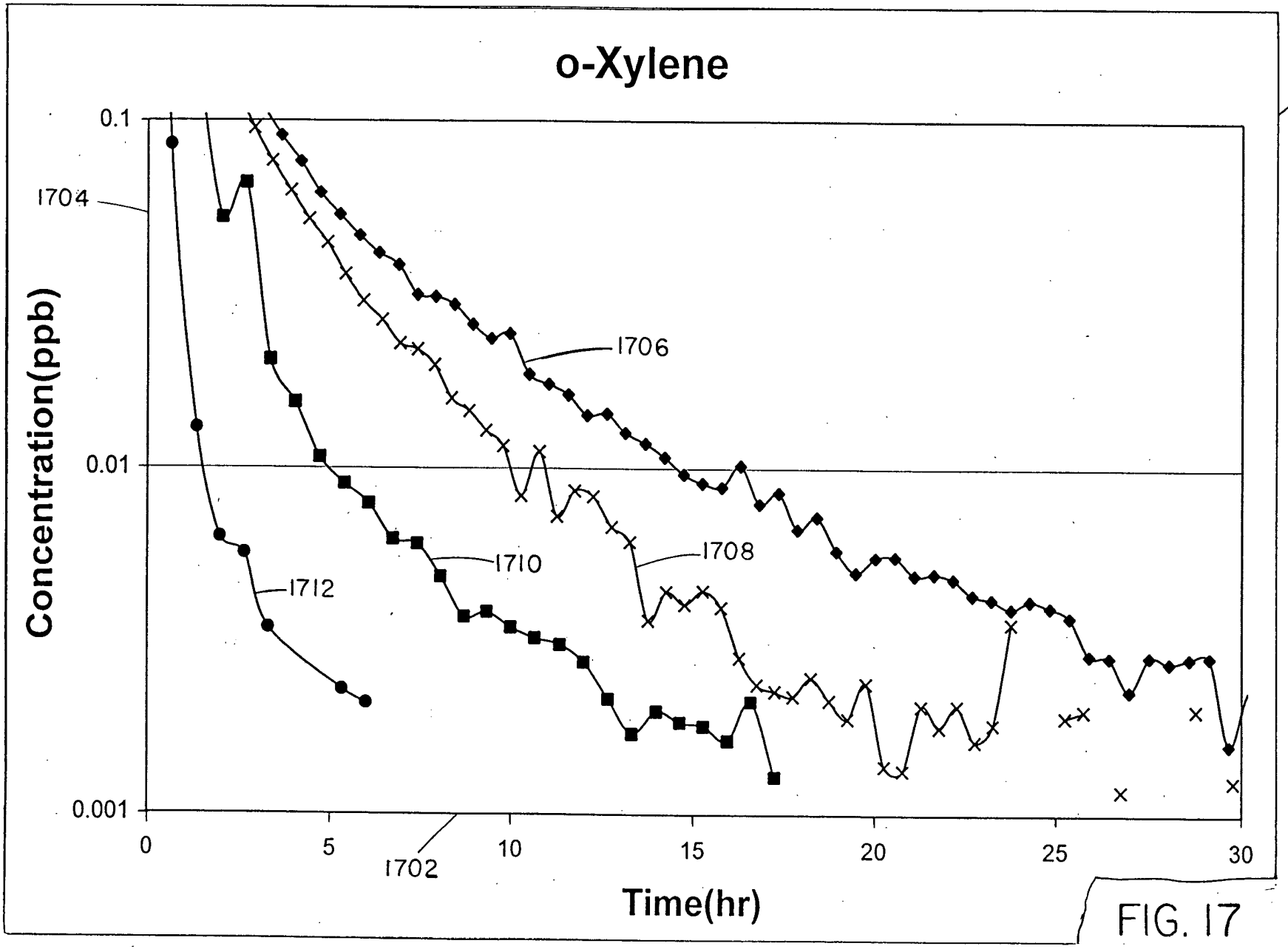

o-Xylene
1700
0.1
1704
0.01
0.001
Concentration(ppb)
1706
1708
1710
1712
0
5
10
15
20
25
30
1702
Time(hr)

FIG. 17

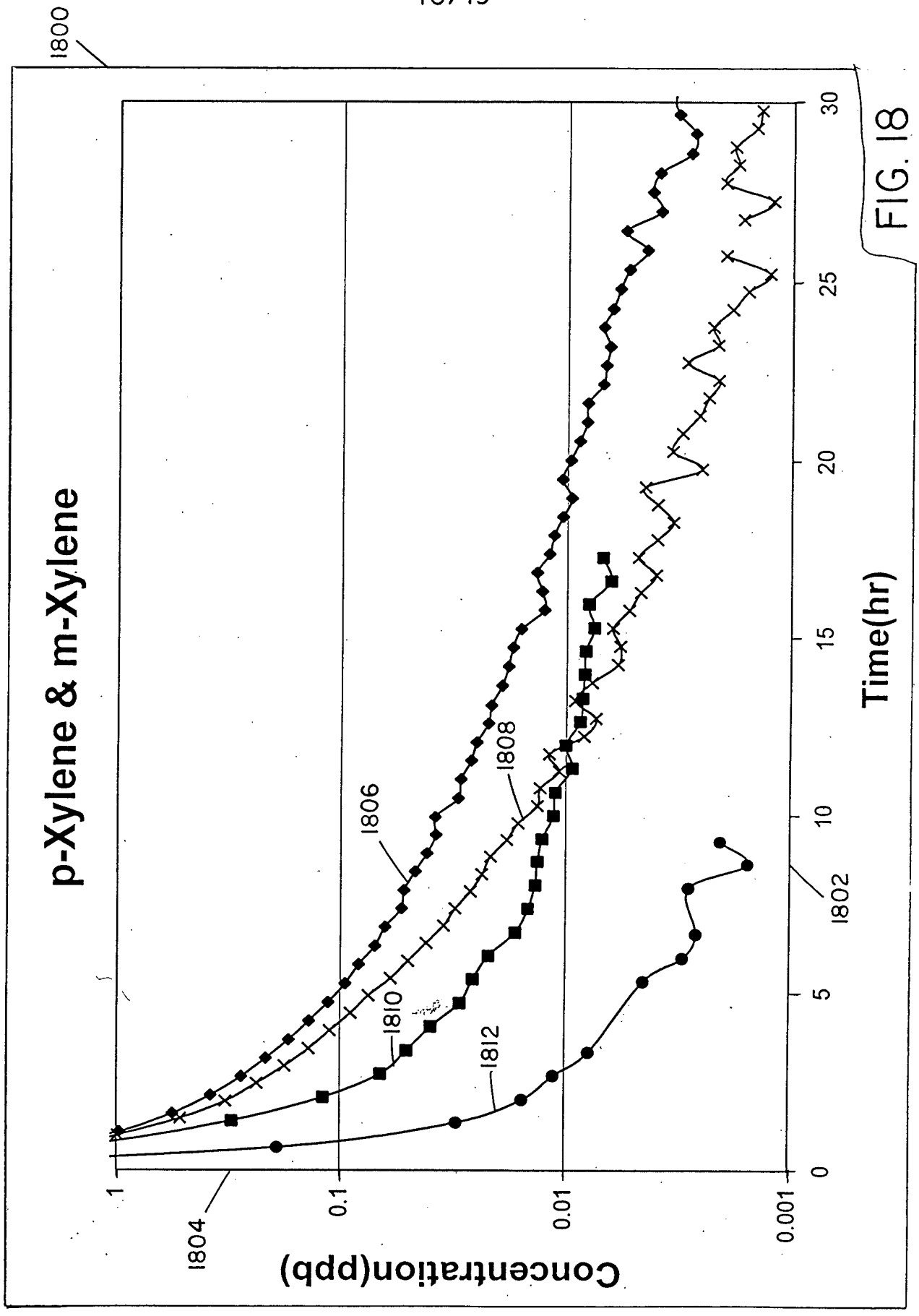

1800
p-Xylene & m-Xylene
Concentration(ppb)
Time(hr)
1
0.1
0.01
0.001
0
5
10
15
20
25
30
1802
1804
1806
1808
1810
1812

FIG. 18

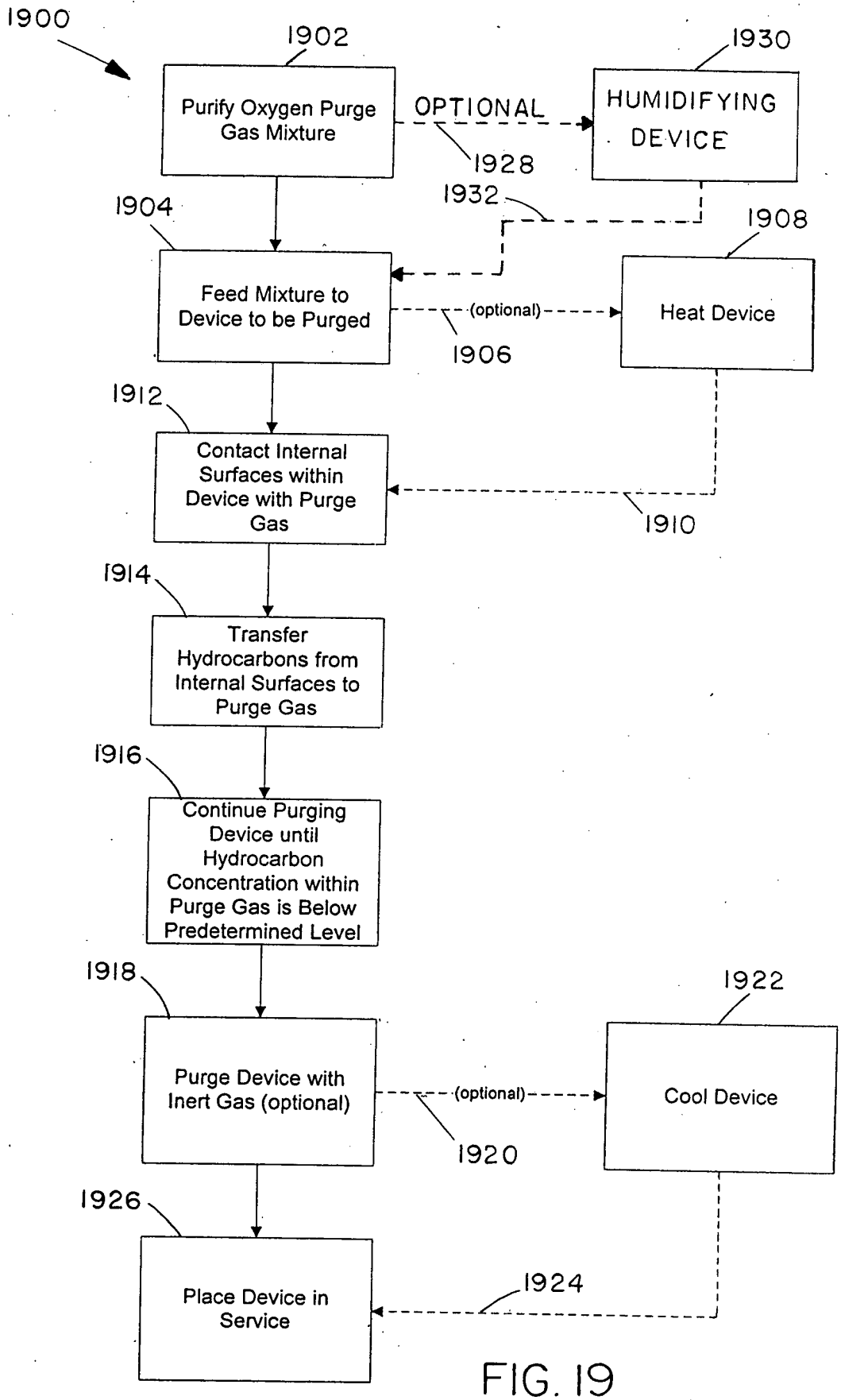

1900
1902
Purify Oxygen Purge Gas Mixture
OPTIONAL
1928
1930
HUMIDIFYING DEVICE
1932
1904
Feed Mixture to Device to be Purged
(optional)
1906
1908
Heat Device
1912
Contact Internal Surfaces within Device with Purge Gas
1910
1914
Transfer Hydrocarbons from Internal Surfaces to Purge Gas
1916
Continue Purging Device until Hydrocarbon Concentration within Purge Gas is Below Predetermined Level
1918
Purge Device with Inert Gas (optional)
(optional)
1920
1922
Cool Device
1926
Place Device in Service
1924

FIG. 19

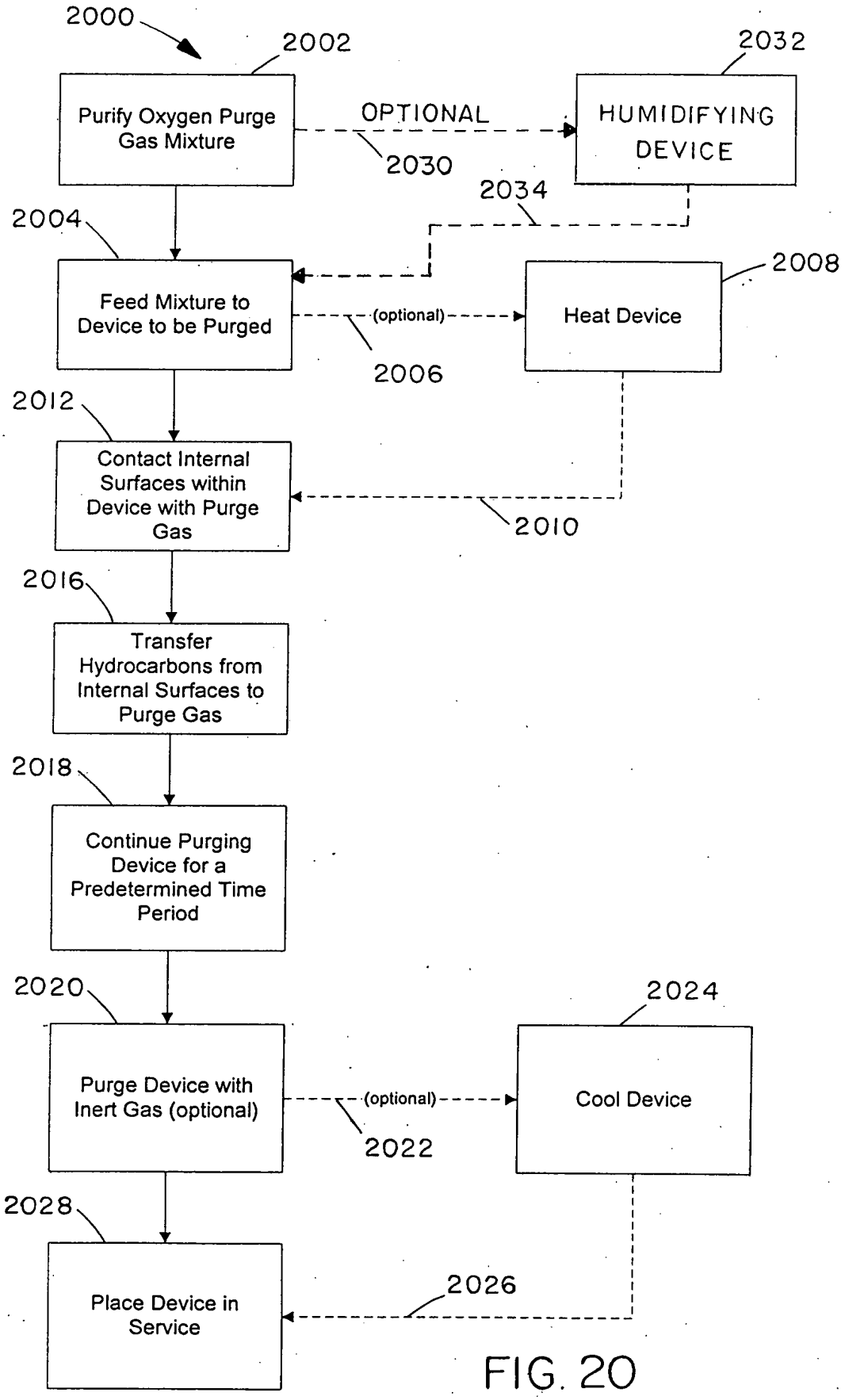

2000
2002
Purify Oxygen Purge Gas Mixture
OPTIONAL
2030
2032
HUMIDIFYING DEVICE
2034
2004
Feed Mixture to Device to be Purged
(optional)
2006
Heat Device
2008
2012
Contact Internal Surfaces within Device with Purge Gas
2010
2016
Transfer Hydrocarbons from Internal Surfaces to Purge Gas
2018
Continue Purging Device for a Predetermined Time Period
2020
Purge Device with Inert Gas (optional)
(optional)
2022
2024
Cool Device
2028
Place Device in Service
2026

FIG. 20

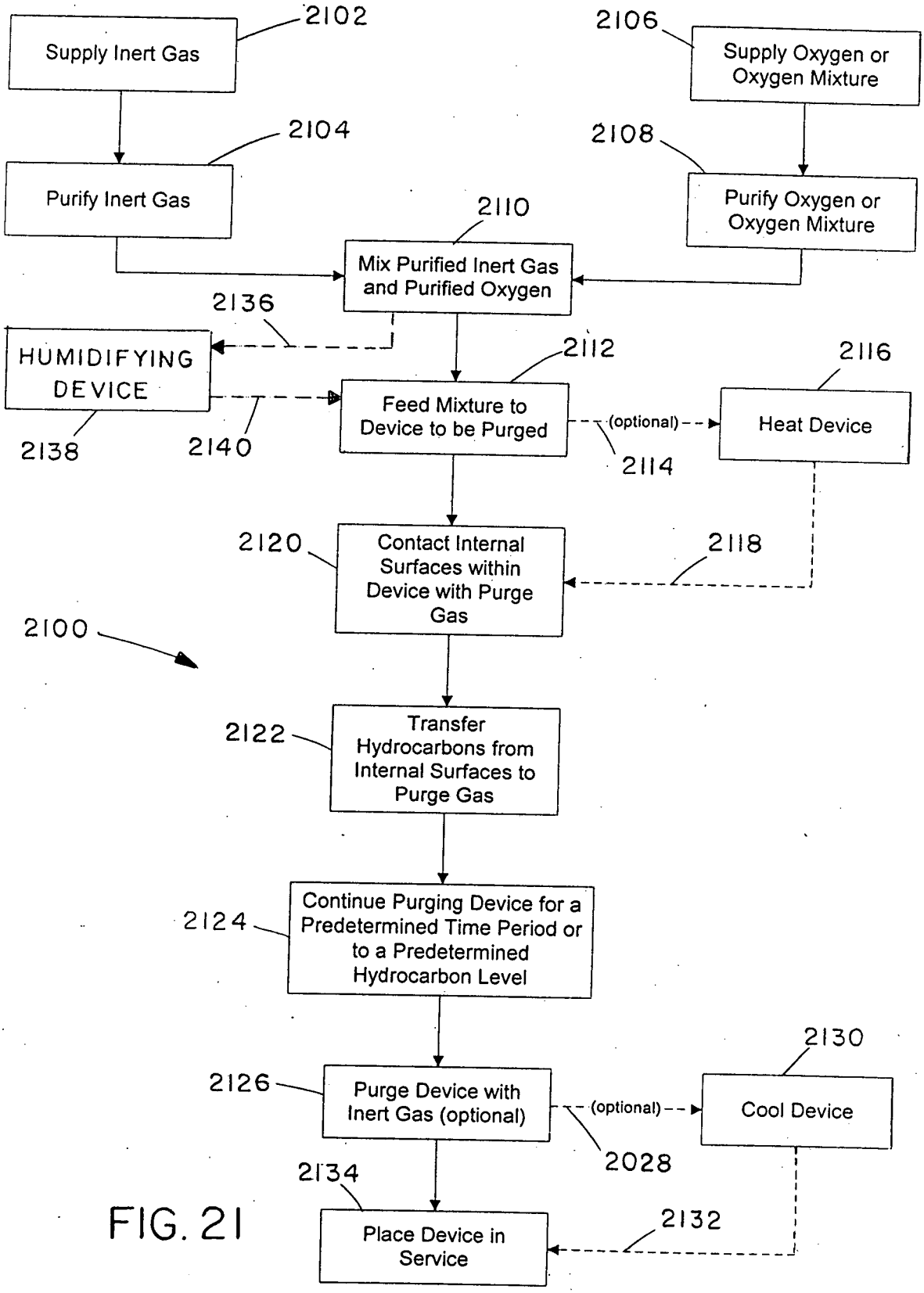

Supply Inert Gas
2102
Supply Oxygen or Oxygen Mixture
2106
Purify Inert Gas
2104
Purify Oxygen or Oxygen Mixture
2108
Mix Purified Inert Gas and Purified Oxygen
2110
2136
HUMIDIFYING DEVICE
2138
2140
Feed Mixture to Device to be Purged
2112
(optional)
2114
Heat Device
2116
2120
Contact Internal Surfaces within Device with Purge Gas
2118
2100
Transfer Hydrocarbons from Internal Surfaces to Purge Gas
2122
Continue Purging Device for a Predetermined Time Period or to a Predetermined Hydrocarbon Level
2124
Purge Device with Inert Gas (optional)
2126
(optional)
2028
Cool Device
2130
2134
Place Device in Service
2132

FIG. 21